

REMARKS

The outstanding Official Action and the cited art have been reviewed. The claims in the application have been amended for greater clarity. The examiner's indication of allowable subject matter in claims 7 and 19 is noted with appreciation. Newly presented independent claims, claims 24 and 25, correspond to claims 7 and 19 as previously presented with the multiple dependent claim 5 dependent from claim 3 as incorporated in new claim 24.

Claims 1, 2, 8, 10 - 13, 15 and 20 - 23 stand rejected under 35 U.S.C. § 102 (a) as anticipated by the U.S. patent No. 6,069,792 of Nelik (the Nelik patent). This rejection is respectfully traversed. For a claim to be anticipated by a single prior art reference each limitation of the claim must be met by the reference. The Nelik patent does not do this.

Each of the independent claims 1 and 12 call for a heat generating component in thermal contact with the inner wall portion of a casing. There is nothing in the Nelik patent to teach or suggest this.

The device disclosed by Nelik includes a heat producing circuit, namely the hard disk drive 12 and two separate heat sinks 14, 16 which are positioned on either side of the disk drive 12. Accordingly, the disk drive 12 is in thermal contact with the heat sinks.

In Nelik, however, the heat sink members 14 and 16 are not a part of a casing but separate support elements for the disk drive. They replace the ordinary support rails that support the disk drive in a computer case or cabinet.

Claims 1 and 12 have been amended to clarify the above distinction. Both require the casing to have a U-shaped bottom and a U-shaped cover. An angled part of the U-shaped bottom and an angled part of the U-shaped cover form a double wall portion of the casing with an inner wall portion and an outer wall portion that defines the air duct. But unlike in the invention, as claimed in claims 1 and 12, where the air duct is formed by the U-shaped bottom and cover, Nelik shows two separate lateral air ducts. And furthermore, Nelik does neither disclose nor show a circuit that includes a heat generating component in thermal contact with the inner wall portion of the air duct as claimed in the independent claims.

It seems that the examiner has interpreted the disclosed hard disk drive 12 as the claimed "heat generating component." In order to clarify that this heat generating component is just a part of the circuit that is implemented on a printed circuit board, the main claims 1 and 12 have been amended by including the feature "said electric circuit being implemented on a printed circuit board where at least one heat generating component is a part of the electric circuit." On this basis then, the independent claims now further differ from the Nelik patent as well. Furthermore, the main claims have been amended by incorporating therein some features of the depending claims to more clearly distinguish the invention from the cited prior art. The remaining claims have been amended accordingly.

It should be clear now that it is a component of an encased circuit that is heat producing and in thermal contact with the wall portion of the casing that is the inner wall of the duct that forms the heat sink and cooling air passageway. This is not at all like Nelik's separately encased disk drive that is supported in a cabinet by two railing replacing air-cooled heat sink members affixed to the cabinet walls.

Claims 3 - 5, 9 and 15 - 17 stand rejected under 35 U.S.C. § 103(a) as obvious over the Nelik patent (claims 6, 14 and 18 are not mentioned but were apparently intended to be rejected with these claims given the examiner's discussion). The examiner's comments concerning the inner and outer wall portions that form the air duct being a part of the bottom casing and cover casing portions might now be considered pertinent to claims 1 and 12 as now amended. The use of the two U-shaped casing parts to afford heat sinks and air passages is a simple, elegant solution to cooling a circuit with heat generating elements. As the application points out this becomes more and more important as the size of devices are reduced. It is noted that the examiner states in this regard, at page 4, paragraph 4 "applicant has not disclosed that making the inner and outer wall portions part of the bottom and cover respectively solves any stated problem or is for any particular purpose...."

But this is incorrect. Applicant states in his Summary of the Invention:

Another advantage is that the space requirements are low. The air duct in the double wall portion can be provided very space-efficiently. Furthermore, the additional costs for providing a double wall portion of the casing are significantly smaller than for providing a supplementary traditional heat sink.

Moreover, the invention enables very flexible designs because the shape and the dimensions of the air duct can be varied very easily and in a wide range.

For example, the cross sectional area or the shape of the cross section of the air duct can be varied. The air duct can have a closed cross section such as for example a rectangular, a circular or an oval cross section. In this case, all of the air transits the air duct. The air duct may also have holes where some of the air may escape from the air duct. The air duct can also have an open cross section such as, for example, a C-like or a U-like cross section. In this case, some of the air that enters the air duct leaves the air duct through the open side of it and does not transit entirely through it.

The same flexibility, simplicity and economy of parts and installation cannot be ascribed to the three separate parts of the Nelik patent whose two individually formed heat sinks must conform to the interior of a cabinet, must be sized and sufficiently rigid to support the disk drive 12.

Constructing Nelik's heat sinks from the casing of the disk drive defeats one purpose of the Nelik arrangement because the heat sinks replace conventional rails in the cabinet by which a disk drive is conventionally slid into and out of place in the cabinet. That purpose will not be served by making the Nelik heat sink members 14 and 16 a part of the heat sink casing. Since now all of claims 1 - 23 now include these features, missing from the Nelik patent and not taught in any other art of record, the rejections of the claims as anticipated by Nelik (claims 1, 2, 8, 10 - 13, 15 and 20 - 23) and as obvious over Nelik (claims 3 - 5, 9 and 15 - 17) should be withdrawn. This application should now be allowed.

The patents to Cheng, Chang, Komatsu and Iwasaki have been reviewed, but are not believed to overcome the failings of the Nelik patent as regards the claims presently in this application. The examiner's comments regarding these have been reviewed. Without agreeing or disagreeing with the examiner's comments, there is nothing to suggest combining features of these patents or adopting any part of their disclosure to arrive at the claimed invention.

Early favorable reexamination of this application is respectfully requested.

A check for \$310.00 is enclosed for the additional claims fee. No further fee is believed required. However, authorization is given to charge any additional fees associated with this communication to Deposit Account No. 070135. A duplicate copy of this sheet is enclosed.

Moreover, the invention enables very flexible designs because the shape and the dimensions of the air duct can be varied very easily and in a wide range.

For example, the cross sectional area or the shape of the cross section of the air duct can be varied. The air duct can have a closed cross section such as for example a rectangular, a circular or an oval cross section. In this case, all of the air transits the air duct. The air duct may also have holes where some of the air may escape from the air duct. The air duct can also have an open cross section such as, for example, a C-like or a U-like cross section. In this case, some of the air that enters the air duct leaves the air duct through the open side of it and does not transit entirely through it.

The same flexibility, simplicity and economy of parts and installation cannot be ascribed to the three separate parts of the Nelik patent whose two individually formed heat sinks must conform to the interior of a cabinet, must be sized and sufficiently rigid to support the disk drive 12.

Constructing Nelik's heat sinks from the casing of the disk drive defeats one purpose of the Nelik arrangement because the heat sinks replace conventional rails in the cabinet by which a disk drive is conventionally slid into and out of place in the cabinet. That purpose will not be served by making the Nelik heat sink members 14 and 16 a part of the heat sink casing. Since now all of claims 1 - 23 now include these features, missing from the Nelik patent and not taught in any other art of record, the rejections of the claims as anticipated by Nelik (claims 1, 2, 8, 10 - 13, 15 and 20 - 23) and as obvious over Nelik (claims 3 - 5, 9 and 15 - 17) should be withdrawn. This application should now be allowed.

The patents to Cheng, Chang, Komatsu and Iwasaki have been reviewed, but are not believed to overcome the failings of the Nelik patent as regards the claims presently in this application. The examiner's comments regarding these have been reviewed. Without agreeing or disagreeing with the examiner's comments, there is nothing to suggest combining features of these patents or adopting any part of their disclosure to arrive at the claimed invention.

Early favorable reexamination of this application is respectfully requested.

A check for \$310.00 is enclosed for the additional claims fee. No further fee is believed required. However, authorization is given to charge any additional fees associated with this communication to Deposit Account No. 070135. A duplicate copy of this sheet is enclosed.

Should the examiner have questions, comments or suggestions regarding this application, the examiner is invited to please contact the undersigned at the telephone number or email address listed below.

Respectfully submitted,
GALLAGHER & KENNEDY, P.A.



Date: March 14, 2008

By: Thomas D. MacBlain
Reg. No. 24,583
Attorneys for Applicant

Gallagher & Kennedy, P.A.
2575 East Camelback Road
Phoenix, AZ 85016-9225
Telephone: (602) 530-8088
Facsimile: (602) 530-8500
Email: tdm@gknet.com